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10/802,233	03/16/2004	Ronald N. Perry	MERL-1550	3572

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Patent Department
Mitsubishi Electric Research Laboratories, Inc.
201 Broadway
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EXAMINER

BRAUTIGAM, ALYSA N

ART UNIT	PAPER NUMBER
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2676

DATE MAILED: 03/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/802,233

Applicant(s)

PERRY ET AL.

Examiner

Alysa N. Brautigam

Art Unit

2676

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-70 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-34 is/are allowed.
- 6) ☒ Claim(s) 35-70 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5/26/04, 6/28/04
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to because of the following:

- Figure 7, Item 404 – Appears to be an extraneous item number

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

- Figure 7, Item 750 – Reference to the item is missing, see paragraph 0132
- Figure 8, Item 800 - Reference to the item is missing, see paragraph 0280
- Figure 13 – Reference to the figure is missing, see paragraph 0112-0113

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities:
 - Page 67, paragraph 0267 – References to "mapping 440" should include reference to Figure 4 to provide coherency
 - Page 83, paragraph 0340 – References Item 2020 which is not shown in Figure 20D.

Appropriate correction is required.

Double Patenting

4. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

5. Claims 35-70 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 35-70 of copending Application No. 10/802,598. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claim 35, 45, 47-48, 53, and 56-60 are rejected under 35 U.S.C. 102(b) as being anticipated by Frisken et al. ("Adaptively Sampled Distance Fields: A General Representation of Shape for Computer Graphics," SIGGRAPH 2000).

8. In regards to claim 35, Frisken (SIGGRAPH) discloses a method for rendering a region of a composite glyph (page 251, Figures 4a-d disclose the composite glyph), comprising:

- defining a composite glyph by a set of elements (page 251, Figures 4a-d disclose the object ["R"] where Figure 4d discloses the set of elements defining the composite glyph);
- generating a set of two-dimensional distance fields using the set of elements (page 251, Figures 4a-d discloses the set of elements of a two-dimensional distance field representing the glyph; section 3.3 – "Reconstructing ADFs"; page 250, Section 3.1, second paragraph, lines 3-5), a composition of the set of two-dimensional distance fields representing the composite glyph (Figures 4a-d); and
- rendering a region of the composite glyph using the set of two-dimensional distance fields (page 251, section 3.3 – Reconstructing ADFs, lines 5-9 disclose the use of distance fields for rendering).

9. In regards to claim 45, Frisken (SIGGRAPH) discloses the method of claim 35, as contained hereinabove. In addition, Frisken discloses wherein a particular element in the set of elements is a distance field (Section 2.1 – ADFs, first paragraph).

10. In regards to claim 47, Frisken (SIGGRAPH) discloses the method of claim 35, as contained hereinabove. In addition, Frisken discloses wherein a particular element in the set of elements is an adaptively sampled distance field (Section 2.1 – ADFs, first

paragraph; Section 3. – “Adaptive Distance Fields” and, in particular, right column, lines 25-28).

11. In regards to claim 48, Frisken (SIGGRAPH) discloses the method of claim 35, as contained hereinabove. In addition, Frisken discloses wherein a particular element in the set of elements is a procedure (page 251, Section 3.3 – “Reconstructing ADFs”, lines 7 discloses “processing an ADF” where it is inherent that, if a process is occurring, then a procedure must be driving it).

12. In regards to claim 53, Frisken (SIGGRAPH) discloses the method of claim 35, as contained hereinabove. In addition, Frisken discloses wherein the defining is performed automatically by a procedure (page 251, section 3.2 - Generating ADFs, paragraphs 4-5 discuss the two procedure algorithms – “top-down approach” and “bottom-up”).

13. In regards to claim 56, Frisken (SIGGRAPH) discloses the method of claim 35 wherein the defining further comprises determining a shape descriptor for a particular element in the set of elements and determining a distance function for the shape descriptor to define the particular element (page 250, Section 3. – “Adaptive Distance Fields and, in particular, right column, lines 25-28).

14. In regards to claim 57, Frisken (SIGGRAPH) discloses the method of claim 35, as contained hereinabove. In addition, Frisken discloses wherein the defining determines the set of elements from a distance field of a shape descriptor for the composite glyph (pages 250-251, section 3.1 – Octree-based ADFs, paragraphs 2-4

disclose the defining determines the set of elements from a distance field of a shape descriptor [corner, edges, curves]).

15. In regards to claim 58, Frisken (SIGGRAPH) discloses the method of claim 35, as contained hereinabove. In addition, Frisken discloses wherein a particular two-dimensional distance field in the set of two-dimensional distance fields is an adaptively sampled distance field (page 250, Section 3. – “Adaptive Distance Fields and, in particular, right column, lines 25-28).

16. In regards to claim 59, Frisken (SIGGRAPH) discloses the method of claim 35, as contained hereinabove. In addition, Frisken discloses wherein a particular two-dimensional distance field in the set of two-dimensional distance fields comprises a set of distances stored in a memory (page 250, right column, lines 8 and 18-24).

17. In regards to claim 60, Frisken (SIGGRAPH) discloses the method of claim 35, as contained hereinabove. In addition, Frisken discloses wherein a particular two-dimensional distance field in the set of two-dimensional distance fields is represented by a procedure (Section 2.1 – “ADFs” discloses the two-dimensional distance fields and the “processing” of the data where it is inherent that, if a process is occurring, then a procedure must be driving it).

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frisken et al. ("Adaptively Sampled Distance Fields: A General Representation of Shape for Computer Graphics," SIGGRAPH 2000) in view of Russ ("The Image Processing Handbook, Fourth Edition").

20. In regards to claim 36, Frisken (SIGGRAPH) discloses the method of claim 35, as contained hereinabove. In addition, Frisken discloses wherein the rendering determines, for each component of each pixel in the region, an antialiased intensity of the component of the pixel. (It is noted that Applicant has not limited the terms "region," "component," and "pixel" sufficiently to preclude the possibility that the pixel is comprised of one component, as would be the case in older displays, and the possibility that the region is comprised of only one pixel.) While Frisken discloses the partitioning of a two-dimensional distance field into cells representing an object and identifying a set of pixels associated with a region and Frisken further discloses the use of Euclidean distances in the creation of distance fields, Frisken does not specifically disclose specifying a set of components for each pixel nor does Frisken specifically disclose the determination of an anti-aliased intensity for each component of the pixels. Russ discloses the details of Euclidean distance maps such that determining an antialiased intensity for each pixel in the set of pixels (page 427, lines 6-7 disclose the use of Euclidean distance maps to generate grey-scale images including the determination of an intensity for each pixel). In addition, Russ discloses the determining further comprising determining a distance for the pixel from the set of cells (page 427, lines 7-

11 disclose the determination of a distance for the pixel) and mapping the distance to the antialiased intensity of the pixel (page 427, lines 7-11 and 26-30 disclose the mapping of distance to the anti-aliased intensity such that the length of the scalar [distance from end to end] is the anti-aliased intensity of the pixel). It would have been obvious to one skilled in the art to which it pertains at the time the invention was made to integrate the teachings of Frisken and Russ to achieve a system and method in which 2-dimensional distance maps are partitioned into cells representing an object and wherein the cells contain pixels and the anti-aliased intensity value for each pixel is determined in order to provide an anti-aliased representation of an image that is both visually pleasing to an observer and overcomes the deficiencies of other, similar anti-aliasing methods.

21. Claims 38-44 and 50-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frisken et al. ("Adaptively Sampled Distance Fields: A General Representation of Shape for Computer Graphics," SIGGRAPH 2000) in view of Applicant's specification.

22. In regards to claim 38, Frisken (SIGGRAPH) discloses the method of claim 35, as contained hereinabove. While Frisken discloses a composite glyph represented by a set of elements, Frisken does not specifically disclose wherein a particular element in the set of elements is a stroke. However, Applicant's specification, in the discussion of prior art, provides various definitions of glyphs and their elements such that a particular element in the set of elements of the glyph is a stroke (paragraphs 0005 and 0026). It

would have been obvious to one skilled in the art to which it pertains at the time the invention was made to integrate the teachings of Frisken and what is well-known in the art as disclosed by Applicant's specification in order to achieve a method wherein a glyph is represented by a distance field is comprised of a set of elements and a particular element in the set of elements is a stroke as this is a common design feature for the representation of glyphs.

23. In regards to claim 39, Frisken (SIGGRAPH) discloses the method of claim 35, as contained hereinabove. While Frisken discloses a composite glyph represented by a set of elements, Frisken does not specifically disclose wherein a particular element in the set of elements is an outline. However, Applicant's specification, in the discussion of prior art, provides various definitions of glyphs and their elements such that a particular element in the set of elements is an outline (paragraphs 0006 and 0011). It would have been obvious to one skilled in the art to which it pertains at the time the invention was made to integrate the teachings of Frisken and what is well-known in the art as disclosed by Applicant's specification in order to achieve a method wherein a glyph is represented by a distance field is comprised of a set of elements and a particular element in the set of elements is an outline as this is a common design feature for the representation of glyphs.

24. In regards to claim 40, Frisken (SIGGRAPH) discloses the method of claim 35, as contained hereinabove. While Frisken discloses a composite glyph represented by a set of elements, Frisken does not specifically disclose wherein a particular element in the set of elements is a radical. However, Applicant's specification, in the discussion of

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prior art, provides various definitions of glyphs and their elements such that a particular element in the set of elements is a radical (paragraphs 0026). It would have been obvious to one skilled in the art to which it pertains at the time the invention was made to integrate the teachings of Frisken and what is well-known in the art as disclosed by Applicant's specification in order to achieve a method wherein a glyph is represented by a distance field is comprised of a set of elements and a particular element in the set of elements is a radical as this is a common design feature for the representation of glyphs.

25. In regards to claim 41, Frisken (SIGGRAPH) discloses the method of claim 35, as contained hereinabove. While Frisken discloses a composite glyph represented by a set of elements, Frisken does not specifically disclose wherein a particular element in the set of elements is a stroked radical. However, Applicant's specification, in the discussion of prior art, provides various definitions of glyphs and their elements such that a particular element in the set of elements is a stroked radical (paragraphs 0026). It would have been obvious to one skilled in the art to which it pertains at the time the invention was made to integrate the teachings of Frisken and what is well-known in the art as disclosed by Applicant's specification in order to achieve a method wherein a glyph is represented by a distance field is comprised of a set of elements and a particular element in the set of elements is a stroked radical as this is a common design feature for the representation of glyphs.

26. In regards to claim 42, Frisken (SIGGRAPH) discloses the method of claim 35, as contained hereinabove. While Frisken discloses a composite glyph represented by a

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set of elements, Frisken does not specifically disclose wherein a particular element in the set of elements is a two-dimensional shape descriptor. However, Applicant's specification, in the discussion of prior art, provides various definitions of glyphs and their elements such that a particular element in the set of elements is a two-dimensional shape descriptor (paragraphs 0003-0005). It would have been obvious to one skilled in the art to which it pertains at the time the invention was made to integrate the teachings of Frisken and what is well-known in the art as disclosed by Applicant's specification in order to achieve a method wherein a glyph is represented by a distance field is comprised of a set of elements and a particular element in the set of elements is a stroke as this is a common design feature for the representation of glyphs.

27. In regards to claim 43, Frisken (SIGGRAPH) discloses the method of claim 35, as contained hereinabove. While Frisken discloses a composite glyph represented by a set of elements, Frisken does not specifically disclose wherein a particular element in the set of elements is a one-dimensional shape descriptor. However, Applicant's specification, in the discussion of prior art, provides various definitions of glyphs and their elements such that a particular element in the set of elements is a one-dimensional shape descriptor (paragraphs 0005 and 0026). It would have been obvious to one skilled in the art to which it pertains at the time the invention was made to integrate the teachings of Frisken and what is well-known in the art as disclosed by Applicant's specification in order to achieve a method wherein a glyph is represented by a distance field is comprised of a set of elements and a particular element in the set of elements is a stroke as this is a common design feature for the representation of glyphs.

28. In regards to claim 44, Frisken (SIGGRAPH) discloses the method of claim 35, as contained hereinabove. While Frisken discloses a composite glyph represented by a set of elements, Frisken does not specifically disclose wherein a particular element in the set of elements is a path. However, Applicant's specification, in the discussion of prior art, provides various definitions of glyphs and their elements such that a particular element in the set of elements is a path (paragraphs 0021, 00154 and 0261). It would have been obvious to one skilled in the art to which it pertains at the time the invention was made to integrate the teachings of Frisken and what is well-known in the art as disclosed by Applicant's specification in order to achieve a method wherein a glyph is represented by a distance field is comprised of a set of elements and a particular element in the set of elements is a path as this is a common design feature for the representation of glyphs.

29. In regards to claim 50, Frisken (SIGGRAPH) discloses the method of claim 35, as contained hereinabove. While Frisken discloses a composite glyph represented by a set of elements, Frisken does not specifically disclose wherein a particular element in the set of elements is an implicit blend of a first shape descriptor and a second shape descriptor. However, Applicant's specification, in the discussion of prior art, provides various definitions of glyphs and their elements such that a particular element in the set of elements is an implicit blend of a first shape descriptor and a second shape descriptor (Frisken discloses the glyph representation where the individual strokes disclosed in Applicant's specification provide the individual elements [edges, corners, rounds, as disclosed with respect to claim 6] which, when combined, form the glyph and

are, therefore, an implicit blend of at least a first shape descriptor and a second shape descriptor). It would have been obvious to one skilled in the art to which it pertains at the time the invention was made to integrate the teachings of Frisken and what is well-known in the art as disclosed by Applicant's specification in order to achieve a method wherein a glyph is represented by a distance field is comprised of a set of elements and a particular element in the set of elements is an implicit blend of a first shape descriptor and a second shape descriptor as this is a common design feature for the representation of glyphs.

30. In regards to claim 51, Frisken (SIGGRAPH) discloses the method of claim 35, as contained hereinabove. While Frisken discloses a composite glyph represented by a set of elements, Frisken does not specifically disclose wherein a particular element in the set of elements is a skeletal descriptor with a corresponding offset descriptor. However, Applicant's specification, in the discussion of prior art, provides various definitions of glyphs and their elements such that a particular element in the set of elements is a path (paragraphs 0021, 0154, 0261, and 0314). It would have been obvious to one skilled in the art to which it pertains at the time the invention was made to integrate the teachings of Frisken, Russ, Kimmel, Perry, and what is well-known in the art as disclosed by Applicant's specification in order to achieve a method wherein a glyph is represented by a distance field is comprised of a set of elements and a particular element in the set of elements is a path as this is a common design feature for the representation of glyphs.

31. Claims 46 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frisken et al. ("Adaptively Sampled Distance Fields: A General Representation of Shape for Computer Graphics," SIGGRAPH 2000) in view of Kimmel et al. (United States Patent Publication Number: 2002/0097912).

32. In regards to claim 46, Frisken (SIGGRAPH) discloses the method of claim 35, as contained hereinabove. While Frisken discloses the set of elements, Frisken does not specifically disclose wherein a particular element in the set of elements is a distance map. Kimmel discloses a method and apparatus of computing sub-pixel Euclidean distance maps wherein a particular element in the set of elements is a distance map (Kimmel: paragraph 0008, lines 1-3; paragraph 0026, lines 11-13). It would have been obvious to one skilled in the art to which it pertains at the time the invention was made to integrate the teachings of Frisken and Kimmel to achieve a system and method for anti-aliasing a two-dimensional distance field to a greater degree of accuracy and with a reduced level of complexity.

33. In regards to claim 49, Frisken (SIGGRAPH) discloses the method of claim 35, as contained hereinabove. While Frisken discloses the set of elements, Frisken does not specifically disclose wherein a particular element in the set of elements is a distance function. Kimmel discloses a method and apparatus of computing sub-pixel Euclidean distance maps wherein a particular element in the set of elements is a distance function (Kimmel: paragraph 0028 discloses the distance function as the point to point distance where paragraph 0026 specifies the point may be a sub-pixel point; paragraphs 0107-0108 disclose the distance function relating the distance value to the anti-aliased

intensity, i.e., graylevel value $g(d)$). It would have been obvious to one skilled in the art to which it pertains at the time the invention was made to integrate the teachings of Frisken and Kimmel to achieve a system and method for anti-aliasing a two-dimensional distance field to a greater degree of accuracy and with a reduced level of complexity.

34. Claims 52, 54, and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frisken et al. ("Adaptively Sampled Distance Fields: A General Representation of Shape for Computer Graphics," SIGGRAPH 2000) in view of Perry et al. ("Kizamu: A System for Sculpting Digital Characters").

35. In regards to claim 52, Frisken discloses the method of claim 35, as contained hereinabove. While Frisken discloses the set of elements, Frisken does not specifically disclose wherein a particular element in the set of elements is drawn by a user. Perry discloses improvements upon the ADF methods disclosed by Frisken including wherein a particular element in the set of elements is drawn by a user (Perry: section 3. – "The Sculpting System" discloses wherein a particular element is drawn by a user [generate a "basic form" and sculpt the detailed object]). It would have been obvious to one skilled in the art to which it pertains at the time the invention was made to integrate the teachings of Frisken and Perry to achieve a system and method wherein a particular element in the set of elements is drawn by a user in order to meet the demands of high-end production studios for the improvement in the areas of character design for games and for virtual reality.

36. In regards to claim 54, Frisken discloses the method of claim 35, as contained hereinabove. While Frisken discloses the set of elements, Frisken does not specifically disclose wherein the defining is performed by a user. Perry discloses improvements upon the ADF methods disclosed by Frisken including wherein the defining is performed by a user (Perry: section 3. – “The Sculpting System” discloses wherein the defining is performed by a user). It would have been obvious to one skilled in the art to which it pertains at the time the invention was made to integrate the teachings of Frisken and Perry to achieve a system and method wherein the defining is performed by a user in order to meet the demands of high-end production studios for the improvement in the areas of character design for games and for virtual reality.

37. In regards to claim 55, Frisken discloses the method of claim 35, as contained hereinabove. While Frisken discloses the set of elements, Frisken does not specifically disclose wherein the defining is performed semi-automatically by a procedure and a user. Perry discloses improvements upon the ADF methods disclosed by Frisken including wherein the defining is performed semi-automatically by a procedure and a user (Perry: section 3. – “The Sculpting System” discloses wherein the defining is performed semi-automatically by a procedure and a user). It would have been obvious to one skilled in the art to which it pertains at the time the invention was made to integrate the teachings of Frisken and Perry to achieve a system and method wherein the defining is performed semi-automatically by a procedure and a user in order to meet the demands of high-end production studios for the improvement in the areas of character design for games and for virtual reality.

Allowable Subject Matter

38. Claims 1-34 are allowed.

39. The following is an examiner's statement of reasons for allowance:

40. Claims 1-34 are allowable because prior art fails to teach or disclose a system and method for rendering a region of a composite glyph comprising the steps of determining, for each component of each pixel in region of the composite glyph, an antialiased intensity of the component of the pixel. Further, prior art fails to teach or suggest wherein the determining further comprises **determining a distance for the component of the pixel, combining the corresponding distances to determine a combined distance, and then mapping the combined distance to the antialiased intensity of the component of the pixel.**

41. Frisken et al. ("Adaptively Sampled Distance Fields: A General Representation of Shape for Computer Graphics," SIGGRAPH 2000) teaches many details of the claimed invention including a two-dimensional distance field representing an object (Applicant has defined "object" to be "two-dimensional objects, such as character shapes, corporate logos, and elements of an illustration contained in a document" in paragraph 0003 of the Applicant's specification), wherein the two-dimensional distance field is partitioned into cells (page 251, Figures 4a-d disclose the object ["R"] partitioned into cells), each cell including a method for reconstructing the two-dimensional distance field within the cell (page 251, section 3.3 – "Reconstructing ADFs", lines 1-2), including identifying a set of cells of a two-dimensional distance field representing an object, the

set of cells associated with a region of the two-dimensional distance field to be rendered (page 251, Figures 4a-d discloses the set of cells of a two-dimensional distance field representing the object; page 250, Section 3.1, second paragraph, lines 3-5); and locating a set of pixels associated with the region (page 252, left column, lines 2-6 disclose the calculations including the x,y,z components such that the location of a set of pixels associated with a region is an inherent action performed by the method). However, Frisken does not disclose or suggest specifying a set of components for each pixel nor does Frisken specifically disclose the determination of an anti-aliased intensity for each component of the pixels. Further, Frisken does not teach or suggest the combination of the corresponding distances of each component of each pixel in the set of pixels to determine a combined distance.

42. In addition, Applicant's remarks, dated 14 February 2005, and submitted in response to the Non-Final Rejection of Patent Application Number 10/396,861, were taken into consideration with respect to the instant application. Specifically, Applicant provides rebuttal to the above-cited Frisken SIGGRAPH reference as well as to the combination of Frisken et al. ("Adaptively Sampled Distance Fields: A General Representation of Shape for Computer Graphics," SIGGRAPH 2000) in view of Russ ("The Image Processing Handbook, Fourth Edition") and in further view of Kimmel et al. (United States Patent Publication Number: 2002/0097912). Where appropriate, the Examiner has considered the arguments and their merits and found that, with respect to the steps of partitioning, associating, and identifying, Applicant's statement are not sufficient to overcome the Frisken reference. However, with respect to the steps of

“locating a set of pixels associated with the region” and “determining an antialiased intensity for each component of each pixel in the set of pixels,” Applicant’s states, “the locations of pixels in a distance field reveal nothing about the locations of pixels in an image” and Frisken does not disclose “any description of locating a set of pixels in a region of a distance field.” Further, in response to “determining an anti-aliased intensity for each component of each pixel in the set of pixels,” Applicant states, “‘sub-pixel accuracy’ does not mean that Kimmel computes distances for each sub-component of a pixel.” After review of Applicant’s arguments and the corresponding references, the Examiner agrees with these assertions.

43. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

Conclusion

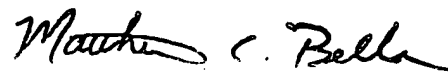
44. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alysa N. Brautigam whose telephone number is 571-272-7780. The examiner can normally be reached on 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Matthew Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2676

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anb

A handwritten signature in black ink, appearing to read "Matthew C. Bella".

MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600